

REMARKS

Claims 71-77 are pending in this application, of which Claim 71 is in independent form, and has been amended to define still more clearly what Applicants regard as their invention. Claims 76 and 77 have been added to assure Applicants of a full measure of protection. Favorable reconsideration is respectfully requested.

In the outstanding Office Action, Claims 71-75 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 6,195,076 (Sakuragi et al.).

An object of the present invention is to reduce or eliminate distortion that occurs when modulation signals to be supplied to display devices (e.g., for individual pixels) adjacent to each other in the row direction have different pulse widths, and more specifically, to suppress the common effect that the luminance of those modulation signals which have longer pulse widths deviates from a desired value.

Independent Claim 71 is directed to a display apparatus that comprises a plurality of column wirings each connected to a respective display device, at least one row wiring, connected to the display devices, and a respective pulse width modulator (“PWM”) provided for each column wiring. The PWMs are for outputting, for each column wiring, a modulation signal. According to Claim 71, the display apparatus also comprises a cross-talk correction arrangement, which controls operation of the pulse width modulator for a predetermined one of the column wirings such that the modulation signal to be applied to that column wiring is corrected in such manner as to inhibit an effect, on luminance in relation to that modulation signal, of deformation of the waveform of that modulation

signal as a result of a level change of the modulation signal supplied to an adjacent column wiring during the application of the modulation signal to the predetermined column wiring.

By virtue of this cross-talk correction arrangement, it is possible to suppress cross-talk that would otherwise be generated by the combination (displaying state along one line) of the luminances of the various display devices (pixels) arranged in the column direction.

Applicants have carefully studied the Office Action and the prior art, but find themselves unable to agree with the propriety of the rejection.

Sakuragi relates to an electron-beam generating apparatus and a display apparatus that uses such electron-beam generation. The *Sakuragi* display apparatus uses a grid or matrix of conductors to address and activate the individual electron-beam generators (pixels). The specification describes the presence of parasitic capacitances where the row wirings cross the column wirings, and the existence of resistance in the wirings (col. 5, line 62, through col. 6, line 8, and Figs. 22B - 22E). In an apparatus using a current source, rather than a voltage source, to drive the pixels, the presence of such parasitic capacitances results in a delay in the rise of the device current upon driving of a pixel, thus reducing, as a practical matter, the response speed of the electron-emitting devices (which otherwise is very high). *Sakuragi* provides a structure that improves the response time by providing a voltage source that is used to charge the parasitic capacitances at high speed (col. 7, lines 3-16).

The Office Action concedes that *Sakuragi* does not teach the recitation of Claim 71 that a modulation signal is corrected such as to inhibit deformation of the

modulation signal waveform as a result of a level change in a modulation signal on an adjacent column wiring. While conceding that that feature is not present in *Sakuragi*, the Office Action asserts it would have been obvious “to utilize *Sakuragi*’s technique of avoiding luminance unevenness inside a circuit diagram of Fig. 7 for the purpose of attaining practical light emission luminance in a display apparatus.” Applicants are not entirely sure what is intended, but in any event, Applicants believe strongly, for the following reasons, that Claim 71 is not in any way suggested by anything in *Sakuragi*.

To begin with, the Fig. 7 referred to is apparently Fig. 7 of *Sakuragi*, showing that patent’s second preferred embodiment (col. 8, lines 37 and 38). Applicants note that amplifiers 21 in Fig. 7, while inverted in polarity relative to those in Fig. 4 (col. 14, lines 12-14), perform the same function, that is, they serve as voltage sources that charge the parasitic capacitances that occur at the crossings of the row wirings with the column wirings. Thus, *Sakuragi*’s “technique of avoiding luminance unevenness” not only could be, but in fact *is*, used in the circuit of Fig. 7. Nonetheless, Applicants submit that this has nothing to do with the relevant feature of Claim 71.

Applicants respectfully remind the Examiner that the problem addressed by the apparatus of Claim 71 is cross-talk between adjacent column wirings, while *Sakuragi* deals with a specific, distinct problem, *viz.*, parasitic capacitances occurring at the crossing of row wirings and column wirings. Applicants strongly urge that nothing in that patent would teach or suggest anything about the problem solved by the present invention. Moreover, Applicants note that, as is clear from the cited portions of *Sakuragi*, the parasitic capacitance problem is solved by means of providing an additional voltage source

(amplifiers 21) to charge the unwanted capacitance quickly. Applicants submit that this does not even hint at applying a correction to a modulation signal on a column wiring, as recited in Claim 71; still less would *Sakuragi* teach or suggest applying a correction to a modulation signal on a column wiring such as to inhibit the cross-talk problem identified in the present application.

For all these reasons, Applicants deem that Claim 71 is clearly allowable over *Sakuragi*.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from Claim 71, and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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